

Guest Editorial

OUTREACH TO PROSPECTIVE ENGINEERING STUDENTS

Outreach, as defined by Wikipedia, is an effort by an organization or group to connect its ideas or practices to the efforts of other organizations, groups, specific audiences or the general public. Engineering outreach aims to raise public awareness of engineering and to make informal contributions to engineering education.

The world without engineers is unimaginable. The contributions from engineers have been very broad based and evident in all possible aspects of our lives. Engineering inventions shape the world and create whole new industries. It is clear that the world will need a continuous strong flow of good students in the mathematics and sciences to be educated and trained as engineers to sustain the achievements which are necessary to keep the world moving efficiently.

However, the number of students opting for an engineering education has seemingly not been as strong as required to satisfy the national and global needs of sustainable development, with many school graduates opting for other programs in the universities. In many universities and colleges, explicit and extensive efforts in outreach have been put forth to arrest this trend and to reinstate enthusiasm in this field among prospective students.

This special issue focuses on the important issue of drawing good students to an engineering education via a full spectrum of innovation and meticulously tailored activities. These can range from courses for school students and teachers, improvements or changes to the engineering curriculum, specially delivered classes to demonstrate engineering applications from science and mathematics, engineering projects for prospective students, inspirational information on the profession and the development of other engaging activities. There is apparently a great deal of work in this field worldwide, and this issue is put together to consolidate these efforts and share these very worthy works internationally.

This special issue is intended to collate realisable ideas, inspirations, as well as outreach approaches which have been developed, implemented and tested, in the following areas:

- Projects for prospective students
- Bridging engineering education to the school science -curriculum
- Innovative competitions and laboratories.
- Collation of inspiring successes of engineers.
- Attracting women to the engineering profession.
- Joint engineering degrees with other fields.
- Design of engineering education curriculum as enablers to successes in other professions.
- Evaluation of enrichment and outreach programs

The response has been excellent with 59 manuscripts submitted and eventually, after rigorous peer review, 15 papers were accepted for publication in the special issue. We hope that the special issue will be interesting to everyone who is concerned, in one way or another, in outreaching to prospective engineering students.

Happy reading.

Kok Kiong Tan, Department of Electrical and Computer Engineering, National University of Singapore
Lawrence J. Genalo, Department of Materials Science & Engineering, Iowa State University
Igor M. Verner, Department of Education in Technology and Science,
Technion — Israel Institute of Technology